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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,593	12/04/2003	Abdus Suttar Khan	033275-422	6912
21839	7590	08/29/2006	EXAMINER	
BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			VAN, LUAN V	
			ART UNIT	PAPER NUMBER

1753

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

44

Office Action Summary

Application No.

10/726,593

Applicant(s)

KHAN ET AL.

Examiner

Luan V. Van

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/28/04
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's amendment of July 21, 2006 does not render the application allowable.

The amendment is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Claims 1 and 3-20 are amended to recite the limitation of coating directly on the surface of a single crystal or directionally solidified article. However, there is no evidence in the applicant's disclosure to support the limitation that the coating is directly on the surface of an article. The disclosure, therefore, does not provide a clear indication to support the limitation. Applicant is required to cancel the new matter in the reply to this Office Action.

Status of Objections and Rejections

The rejection of claim 2 is obviated by Applicant's cancellation.

All rejections from the previous office action are withdrawn in view of Applicant's amendment.

New grounds of rejection under 35 U.S.C. 103(a) are necessitated by the amendments.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 3-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 3-20 are amended to recite the limitation of coating directly on the surface of a single crystal or directionally solidified article. However, there is no evidence in the applicant's disclosure to support the limitation that the coating is directly on the surface of an article. The disclosure, therefore, does not provide a clear indication to support the limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-5, 7-12 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster '205 in view of Allen et al..

Regarding claim 1, Foster '205 teaches a method of depositing a MCrAlY-coating on the surface of a single crystal article, such as a nickel base superalloy, the method comprising the steps of coating the article only at a local area with the MCrAlY-coating by an electroplated method (column 7 lines 58-62). The gamma/gamma prime and gamma/beta MCrAlY-coating is a product made by the process of electroplating. Since the MCrAlY-coating of Foster '205 is made by the same process as that of the instant claim, the MCrAlY-coating of Foster '205 would be either a gamma/gamma prime or gamma/beta MCrAlY-coating. The instant disclosure fails to disclose any processing conditions that would distinguish the MCrAlY-coating of the instant claims from that of Foster '205. Foster '205 thus meets the limitations of this claim.

In addition, Foster '205 teaches:

It has become common practice to coat superalloy components with corrosion resistant material since the superalloy itself will not normally be capable of withstanding the corrosive/oxidative in-service atmosphere.

One practice is to aluminise the superalloy. This is usually accomplished using a so-called pack aluminising process, or by physical vapour deposition. These processes involve diffusion of Al

Art Unit: 1753

into the superalloy to form aluminides such as NiAl in the case of Ni base superalloys. In service, a surface layer of Al₂O₃ forms to protect the material beneath and this tends to exfoliate due to thermal expansion and contraction. This is gradually repaired by outwardly diffusing Al and finally, when there is no longer sufficient Al to replace exfoliated material at a particular location, the superalloy component will be liable to rapid localised corrosion. Chromium and silicon either together or singly and alone or in addition to aluminium may likewise be diffused into the superalloys to form a surface layer including chromides or suicides. Although reference will be made hereafter mainly to aluminising it should be understood that such references should be interpreted as alternatively referring mutatis mutandis to chromising and/or siliconising. (Column 1 lines 43-65).

According to MPEP 2144.04, omission of an element and its function is obvious if the function of the element is not desired. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Foster '205 by omitting the underlying aluminized layer on the substrate if the corrosion protection property of the aluminized layer is not desired.

Nevertheless, Allen et al. teach that the MCrAlY-coating can be formed directly on the substrate (Paragraph 10, Fig. 1a, and Fig. 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Foster '205 by depositing the MCrAlY-coating directly on an article as taught by Allen et al., because the MCrAlY-coating would prevent corrosion and/or stress corrosion cracking by acting as a barrier between the salt and nickel-based alloy component (Paragraph 10 of Allen et al.)

Regarding claim 3, Foster '205 teaches coating the article only at a local area with the MCrAlY-coating by an electroplated method (column 7 lines 58-62).

Replication of the electroplating method at different local areas on the surface of the article is not patentable unless a new and unexpected result is produced.

Regarding claims 4 and 5, Foster '205 teaches during the step of coating the article only at a local area with the MCrAlY-coating by an electroplated method the areas not to be coated are masked with wax (column 7 lines 58-62).

Regarding claim 7, Foster '205 teaches the method is used as a repair process for a used MCrAlY-coating. This is an intended use of the invention. The invention of Foster '205 is equally applicable to a repair process.

Regarding claim 8-10, Foster '205 teaches a gas turbine article, including a blade or vane (column 1 lines 9-14) is coated (also see Example).

Regarding claims 11-12 and 19-20, Foster '205 teaches superalloy gas turbine components may be directionally solidified or in the form of single crystal structures (column 1 lines 39-42).

Claims 6 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster '205 in view of Allen et al., and further in view of Rigney et al. '447.

Foster '205 and Allen et al. teach the method as described above.

Regarding claims 6 and 13, Foster '205 differs from the instant claim in that the reference does not explicitly different areas are coated with different coatings.

Rigney et al. '447 teach an "invention [which] provides a gas turbine component that is protected against environmental damage in different locations by different types of protective layers and coatings. The invention recognizes that different regions of the surfaces of the turbine components experience different types of degradation due to the environment, even though the different regions may be separated by a matter of inches

Art Unit: 1753

or less. The understanding of the performance of different protective layers has progressed to the point that various protective layers may be optimized for performance under these different conditions of environmental damage" (column 1 line 63 -- column 2 line 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Foster '205 and Allen et al. by coating different locations by different types of protective layers and coatings as taught by Rigney et al. '447, because different regions of the surfaces of the turbine components experience different types of degradation due to the environment.

Regarding claim 14-16, Foster '205 teaches a gas turbine article, including a blade or vane (column 1 lines 9-14) is coated (also see Example).

Regarding claims 17-18, Foster '205 teaches superalloy gas turbine components may be directionally solidified or in the form of single crystal structures (column 1 lines 39-42).

Claims 1, 3-5, 7-12 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster '205 in view of Allen et al. and Foster UK App. '466 (assuming the gamma/gamma prime or gamma/beta phase is not an inherent property of the MCrAlY-coating).

Foster '205 teaches the method as described above.

In addition, Foster '205 teaches:

Art Unit: 1753

It has become common practice to coat superalloy components with corrosion resistant material since the superalloy itself will not normally be capable of withstanding the corrosive/oxidative in-service atmosphere.

One practice is to aluminise the superalloy. This is usually accomplished using a so-called pack aluminising process, or by physical vapour deposition. These processes involve diffusion of Al into the superalloy to form aluminides such as NiAl in the case of Ni base superalloys. In service, a surface layer of Al₂O₃ forms to protect the material beneath and this tends to exfoliate due to thermal expansion and contraction. This is gradually repaired by outwardly diffusing Al and finally, when there is no longer sufficient Al to replace exfoliated material at a particular location, the superalloy component will be liable to rapid localised corrosion. Chromium and silicon either together or singly and alone or in addition to aluminium may likewise be diffused into the superalloys to form a surface layer including chromides or suicides. Although reference will be made hereafter mainly to aluminising it should be understood that such references should be interpreted as alternatively referring mutatismutandis to chromising and/or siliconising. (Column 1 lines 43-65).

According to MPEP 2144.04, omission of an element and its function is obvious if the function of the element is not desired. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Foster '205 by omitting the underlying aluminized layer on the substrate if the corrosion protection property of the aluminized layer is not desired.

Nevertheless, Allen et al. teach that the MCrAlY-coating can be formed directly on the substrate (Paragraph 10, Fig. 1a, and Fig. 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Foster '205 by depositing the MCrAlY-coating directly on an article as taught by Allen et al., because the MCrAlY-coating would prevent corrosion and/or stress corrosion cracking by acting as a barrier between the salt and nickel-based alloy component (Paragraph 10 of Allen et al.)

Art Unit: 1753

Foster '205 differs from the instant claim in that the reference does not explicitly mention that the MCrAlY-coating is a gamma/gamma prime or gamma/beta MCrAlY-coating.

Foster '466 teach "by electrodeposition there can be produced a coating in which particles forming one phase are dispersed in a matrix forming a second phase and such coating has very desirable properties, and surface finish. The composite coating may be contrasted with those produced by spraying techniques" (page 1, lines 60-65).

Foster '466 teaches two phases are present in the coating, which clearly suggest that the MCrAlY-coating can be a gamma/gamma prime or gamma/beta MCrAlY-coating.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have recognized that the electrodeposited MCrAlY-coating of Foster '205 is a gamma/gamma prime or gamma/beta MCrAlY-coating as suggested by Foster '466.

Claims 6 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster '205 in view of Allen et al., Foster UK App. '466, and further in view of Rigney et al. '447 (assuming the gamma/gamma prime or gamma/beta phase is not an inherent property of the MCrAlY-coating).

Foster '205 and Allen et al. teach the method as described above. Regarding claims 6 and 13, Foster '205 differs from the instant claim in that the reference does not explicitly different areas are coated with different coatings.

Art Unit: 1753

Rigney et al. '447 teach an "invention [which] provides a gas turbine component that is protected against environmental damage in different locations by different types of protective layers and coatings. The invention recognizes that different regions of the surfaces of the turbine components experience different types of degradation due to the environment, even though the different regions may be separated by a matter of inches or less. The understanding of the performance of different protective layers has progressed to the point that various protective layers may be optimized for performance under these different conditions of environmental damage" (column 1 line 63 -- column 2 line 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Foster '205, Allen et al. and Foster '466 by coating different locations by different types of protective layers and coatings as taught by Rigney et al. '447, because different regions of the surfaces of the turbine components experience different types of degradation due to the environment.

Response to Arguments

In the arguments presented on page 7 of the amendment, the applicant argues that Foster '205 does not teach coating directly onto a surface of an article.

As stated in the office action above, omission of an element and its function is obvious if the function of the element is not desired. See MPEP 2144.04. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Foster '205 by omitting the underlying

Art Unit: 1753

aluminized layer on the substrate if the corrosion protection properties of the aluminized layer is not desired. Nevertheless, Allen et al. teach that the MCrAlY-coating can be formed directly on the substrate (Paragraph 10, Fig. 1a, and Fig. 4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Foster '205 by depositing the MCrAlY-coating directly on an article as taught by Allen et al., because the MCrAlY-coating would prevent corrosion and/or stress corrosion cracking by acting as a barrier between the salt and nickel-based alloy component (Paragraph 10 of Allen et al.)

With respect to the argument that the coating method of Foster '205 would result in a different structure, the arguments of counsel cannot take the place of evidence in the record. *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). Objective evidence which must be factually supported by an appropriate affidavit or declaration to be of probative value includes evidence of unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant. See, for example, *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984). See MPEP 716.01(c).

Applicant's arguments have been fully considered but they are not persuasive.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LWV
August 23, 2006



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